WHAT WE CLAIM IS:

1. An oilseed of the species *Brassica juncea* bearing an endogenous oil having an oleic acid content of at least 55% by weight, a linoleic acid content of less than 25% by weight, a linolenic acid content of less than 14% by weight, a erucic acid content of less than 1% by weight, a palmitic acid content of less than 6% by weight, a stearic acid content of less than 2.5% by weight, and a total saturated fatty acid content of less than 7.1% by weight.

2. The oilseed of Claim 1, that leaves a meal after extraction of the endogenous oil from the seeds, said meal containing less than 30 μmole of aliphatic glucosinolates per gram.

3. The oilseed of Claim 2, wherein said meal contains less than 3 μmole of allyl glucosinolate per gram of meal.

4. The oilseed of Claim 1, wherein the total saturated fatty acid content is less than 6.5% by weight.

5. The oilseed of Claim 1, derived by crossing a high oleic acid *B. juncea* line and a low saturated fatty acid *B. juncea* line.

6. The oilseed of Claim 1, having a genome that includes both *B. juncea* lines J90-3450 and J90-4316 in its lineage.

7. The oilseed of Claim 1, derived by crossing *B. juncea* lines J90-3450 and J90-4316.

8. An oilseed of *B. juncea* line J96D-2250 (ATCC Accession No. 203101).

9. An oilseed of *B. juncea* line J96D-2990 (ATCC Accession No. 203102).

10. An oilseed of *B. juncea* line J96D-0758 (ATCC Accession No. 203103).

11. The oilseed of Claim 1, wherein the oleic acid content is at least 60% by weight.

12. A *B. juncea* seed containing an endogenous oil having an oleic acid content of at least 55% by weight, a linoleic acid content of less than 25% by weight, a linolenic acid content of less than 14% by weight, a erucic acid content of less than 1% by weight, a palmitic acid content of less than 6% by weight, a stearic acid content of less than 2.5% by weight, and a total saturated acid content of less than 7.1% by weight, wherein genetic determinants for said endogenous oil are those obtainable by crossing a first parent designated J90-3450 with a second parent designated J90-4316.

13. A genetically stable plant of the species *B. juncea* that develops mature seeds bearing an endogenous oil having an oleic acid content of at least 55% by weight, a linoleic acid content of less than 25% by weight, a linolenic acid content of less than 14% by weight, a erucic acid content of less than 1% by weight, a palmitic acid content of less than 6% by weight, a stearic acid content of less than 2.5% by weight, and a total saturated acid content of less than 7.1% by weight; or a part or precursor of said plant.

14. The plant of Claim 13, that leaves a meal after extraction of the endogenous oil from the seeds, said meal containing less than 30 μmole of glucosinolates per gram.

15. The plant of Claim 14, wherein said meal contains less than 3 μmole of allyl glucosinolates per gram.

16. The plant of Claim 13, having a genome that includes a high oleic acid *B. juncea* line and a low saturated fatty acid *B. juncea* line in its lineage.

17. The plant of Claim 13, derived by crossing a high oleic acid *B. juncea* line and a low saturated fatty acid *B. juncea* line.

18. The plant of Claim 13, having a genome that includes both *B. juncea* lines J90-3450 and J90-4316 in its lineage.

19. The plant of Claim 18, derived by crossing *B. juncea* lines J90-3450 and J90-4316.

20. A plant grown from an oilseed of *B. juncea* line J96D-2250 (ATCC Accession No. 203101), or having the physiological characteristics of such a plant.

21. A plant grown from an oilseed of *B. juncea* line J96D-2990 (ATCC Accession No. 203102), or having the physiological characteristics of such a plant.

22. A plant grown from an oilseed of *B. juncea* line J96D-0758 (ATCC Accession No. 203103), or having the physiological characteristics of such a plant.

23. The plant of Claim 13, wherein the oil has an oleic acid content of at least 60% by weight and a total saturated acid content of less than 6.5% by weight.

24. A seed oil having an oleic acid content of at least 55% by weight, a linoleic acid content of less than 25% by weight, a linolenic acid content of less than 14% by weight, a erucic acid content of less than 1% by weight, a palmitic acid content of less than 6% by weight, a stearic acid content of less than 2.5% by weight, and a total saturated acid content of less than 7.1% by weight, said oil having been extracted from an oilseed as defined in Claim 1.

25. A process of producing a genetically stable *B. juncea* plant that develops mature seeds bearing an endogenous oil having an oleic acid content of at least 55% by weight, a linoleic acid content of less than 25% by weight, a linolenic acid content of less than 14% by weight, a erucic acid content of less than 1% by weight, a palmitic acid content of less than 6% by weight, a stearic acid content of less than 2.5% by weight, and a total saturated acid content of less than 7.1% by weight, said process comprising the steps of:

crossing a line of *B. juncea* having a lineage that includes J90-3450 with *a B. juncea* line having a lineage that includes J90-4316 to form F1 progeny;

propagating said progeny by a method selected from the group consisting of self-pollination, and development of doubled haploid plants;

and, from resulting progeny, selecting genetically stable plants that generate seeds containing an endogenous oil that has an oleic acid value of more than 55% by weight, a linoleic value of less than 25% by weight, a linolenic acid value of less than 14% by weight, an erucic acid value of less than 1% by weight, a palmitic acid value of less than 6% by weight, a stearic acid content of less than 2.5% by weight and a total saturate content of less than 7.1% by weight.

26. A process of producing a genetically stable *B. juncea* plant that develops mature seeds bearing an endogenous oil having an oleic acid content of at least 55% by weight, a linoleic acid content of less than 25% by weight, a linolenic acid content of less than 14% by weight, a erucic acid content of less than 1% by weight, a palmitic acid content of less than 6% by weight, a stearic acid content of less than 2.5% by weight, and a total saturated acid content of less than 6.5% by weight, said process comprising the steps of:

crossing a line of *B. juncea* having a lineage that includes J90-3450 with a *B. juncea* line having a lineage that includes J90-4316 to form F1 progeny;

propagating said progeny by a method selected from the group consisting of either self-pollination or development of doubled haploid plants;

from resulting progeny, selecting genetically stable plants that generate seeds containing an endogenous oil that has an oleic acid value of more than 55% by weight, a linoleic value of less than 25% by weight, a linolenic acid value of less than 14% by weight, an erucic acid value of less than 1% by weight, a palmitic acid value of less than 6% by weight, a stearic acid content of less than 2.5% by weight and a total saturate content of less than 7.1% by weight;

and, utilizing mutagenesis to produce a plant with a low saturated fat content, crossing the low saturated plant or its progeny with a plant with > 55% by weight oleic acid to produce progeny with an oleic acid value of more than 55% by weight, a linoleic value of less than 25% by weight, a linolenic acid value of less than 14% by weight, an erucic acid value of less than 1% by weight, a palmitic acid value of less than 6% by

weight, a stearic acid content of less than 2.5% by weight and a total saturate content of less than 6.5% by weight.

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